THE SCOPE

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THE SCOPE

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ALUMNI ASSOCIATION

DR. PAUL S. CLINE

A regular meeting of the Alumni Association was held February 4th at the school building. Dr. Namias, who was guest speaker of the evening, chose for his topic, "Telescopic Spectacles". The lecture was supplemented by the demonstration of the trial case of telescopic spectacles which was obtained through the courtesy of Dr. Howard Doane.

The next meeting is scheduled for March 4th, and the guest speaker will be Dr. Thomas H. Eames who will speak on his, "Investigation with the Visual Analysis of Mentally Retarded Children". A large attendance is expected.

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The Staff of the Scope is pleased to present in this issue a requested article from the keen visioned mind of DR. A. M. SKEFFINGTON, OPT. D., Director of The Graduate Clinic Foundation, with headquarters at St. Louis, Missouri.

True to his beliefs, Dr. Skeffington, rather than submit the usual treatise with its elastic platitudes, has struck the keynote of modern optometry with two questions, which effectively show, that optometry has broken loose from the shackles of physics and henceforth is to be a science bounded not by the exactitudes of mathematics, but rather will be a profession, the essence of which will be the consideration of the human element with its physiological and psychological ramifications.

As a concrete illustration of the new world of optometry the two questions selected by Dr. Skeffington are:

1. (a) If the "error of refraction" measurable in a "hyperope" is caused by the "shortness of the eye ball" or any similar mechanistic lack in the refracting system—why is not a plus 2.00 hyperope always in greater discomfort than the plus .25 D. Hyperope?

(b) If the .25 D. of hyperopia causes discomfort, why will the correcting of plus 1.75 of the larger "error" give him comfort, when it leaves the same "error" as that known by the possessor of the smaller "error"?

2. If the "error" found at far point is the measure of the amount of accommodation used at far, in overcoming a mechanical deficiency from the theoretical "emmetropic" eye, why is it not possible to find, with the retinoscope or cross-cylinders or any other method, the full 2.50 D. of accommodation actually used at sixteen inches?

The answers will be personally judged by Dr. Skeffington and the student who in his opinion has tendered the most logical answer will receive as a personal gift from him a fascinating book which has just been published in London by Sherrington, Creed, Denny-Brown, Eccles and Liddell, "Reflex Activity of the Spinal Cord".

A DREAM COMING TRUE

ABRAHAM L. GRAUBART, OPT. D.
Past President, New York Academy of Optometry
Former President, Columbia University, School of Optometry Alumni Association
Former National President, Omega Epsilon Phi

In the October 1931 issue of the OPTOMETRIC DIGEST, I wrote a short article entitled "The Metropolitan District Has 400 Upstairs Optometrists". For those that did not read that article, it appears below in toto:

"I know you were surprised when you read the title of this article. It is but a prediction. In the year of 1935, I hope to write an article that will have the same title but in that year, you will not be surprised. Some of you will say, "*Impossible; it cannot be done.*" I say it will be done and they will like it. I believe that 100 of the 400 will be in office buildings and the other 300 will be in ground floor suites of

rooms such as physicians have. Why will there be so many optometrists in upstairs offices? Because—upstairs, one can do better work and make more money.

Personally I believe that the professional optometrist is a better business man than the store optometrist. Ninety per cent of the store men can not meet all of their bills and about ninety per cent of the professional optometrists do meet their bills. If you do not believe me, ask any wholesaler.

When vacation time comes, who closes their offices? Of course, only upstairs men; and some close their offices for a month. Can any store do that? No, absolutely no. Remember that the college trained optometrist of today has a different standard of living from that of the exempt optometrist of twenty years ago. All patients who go to the professional optometrist are recommended, so you see none are lost through the closing of an office.

Why do we expect so many professional men by 1935? The reason is this: no successful upstairs optometrist desires to go downstairs but every competent downstairs man is hoping and waiting for the day when he will have a large enough following to go upstairs. Even successful downstairs men are thinking of going upstairs.

You know that there are hundreds of ethical physicians who know that store optometrists do better work than the oculists and still do not send their cases to the stores. Why should they? If I were a physician, I would not send a single case to a store for consultation. I would not lower my dignity and professional standing by referring my patients to a store for professional services.

The members of the New York Academy of Optometry have been accused of "high-hatting" store men. This is not true. They feel sorry and pity store men. Working from 9 A. M. to 9 P. M. six days a week is no joke. Three years ago the writer suggested a co-operative plan which the Academy agreed to finance. This plan was to help ten optometrists establish themselves in upstairs offices. But the time was not as ripe as it now is. After spending much time, trouble and money, the New York Academy was unable to obtain enough men to take part in this plan. Conditions have changed. Now the competent optometrists know that *Optometry has arrived.* With the result that the writer received letter after letter begging him to ask the New York Academy of Optometry to reconsider its co-operative plan. I have just been informed that Omega Epsilon Phi, the national non-sectarian optometrical fraternity, is working on a plan to assist young men in a professional practice.

Perhaps one of the best reasons why oculists and store optometrists are losing patients is because of the One Hour Examination. Only upstairs men can afford and do take an hour for the average examination. Can you imagine what would happen if stores and physicians decided to spend one hour on each case?

Co-operation is one of the secrets of success. Have you noticed that upstairs optometrists refer patients to each other? They learned that secret from the physician. Do store optometrists refer patients to each other? No. Here we see just about the opposite condition. Most stores open their doors and then throw their keys away. I don't blame them, as they might lose a coil spring repair job.

I do not advise the recent graduate to open an office in a suite of rooms in some office building. I do advise them to fit up a room or two in their homes as an office. The man of to-day who starts in such an office will be one of the high-class optometrists of ten years hence."

Now, January, 1935 just three years since the article appeared, that prediction has almost become a fact.

I have received in the past year letters from 23 optometrists informing me that they have opened professional (upstairs) optometrical offices. Many of these letters had questions on, How to Build a Professional Practice. It is interesting to note the locations of these new offices. Three have joint offices with physicians, four with

dentists, two in office buildings and fourteen have opened offices in their homes. Several of those in their homes have ground floor physicians' suites. All of these men have other positions from which their income is derived while they are building their practices. All of these offices are in the metropolitan district. There is no doubt many more have opened offices of which I do not knew. The New York Academy of Optometry has 28 members. There are 25 other upstairs professional offices that do not pass the rigid test of the New York Academy. Here are 75 upstairs offices that I know of and there must be an equal number that I have not kept track of. We have a total of 150. Gradually by the end of 1935 we will have the "400".

University graduate optometrists, especially those who have several degrees (as the Columbia University School of Optometry is producing), will not be content in credit stores, jewelry, optical or department stores. The cultured optometrist who has ability will have his own professional office.

So I say, "my hat is off" to these 23 men who have foresight enough to open their own professional practices.

THE PROFESSIONAL PRACTICE OF OPTOMETRY

Dr. Thomas Costa
Optometrist, Providence R. I.

Foremost among such safeguards is the necessity of procuring equipment which insures the best expression of the doctor's skill in determination, refraction and physiologic correction. Humanity is forever indebted to an optometrist, Dr. Harry L. Fuog, Professor of Phorometry, Los Angeles School of Optometry, for the means of investigating the efficiency of and improving those ocular functions which precede recognition of the object seen. Before his revolutionizing innovation, optometrists and other refractionists began their examinations only after the patient's eyes was fixed upon the object of regard without recognition of the fact that modern industrial conditions exact their greatest toll of the functions of monocular and binocular fixation, orientation, excursion and co-ordination. From Dr. Fuog's beginning, optometrists in professional practices have developed means of demonstrating and more clearly explaining conditions to their patient; and a systematic technique for the correction of many previously hopeless conditions.

Moreover, the equipment so selected should be adapted in every particular to the use intended. It is no longer necessary or excusable for an optometrist to employ devices for which he must apologize, or which require him to perform ridiculous antics and contortions before the eyes he purports to examine. Neither is it necessary for the modern optometrist to exhaust his own patience and physical energies in directing orthoptic calisthenics, nor to depend upon the rare co-operation necessary if "home exercises" succeed.

Present day optometric instruments permits the properly euipped optometrist to investigate and to exercise every ocular function without the sacrifice of professional dignity or prestige.

Another important safeguard is to insist upon sufficient opportunity to examine and study each case. The routine, or preliminary examination must be followed by other appointments until the optometrist, through his study of the case is confident of two equally important factors: 1st, his own understanding of conditions; and 2nd, the patient's whole-hearted co-operation.

Once the optometrist accepts a case, he places his professional reputation in the patient's hands to do with as the patient wills; or worse, subject to the patient's thoughtlessness.

This leads to the question of fees. The fee in every case must be high enough to

command the respect of the patient for the optometrist's skill and ability. If the fee named is less than the value of the patient's own time, demanded in co-operation, he will, then or later, seek one whose fees command his respect. On the other hand, the fee named should be within the ability of the patient to pay.

If the patient is able, but unwilling to pay the fee named, it is because he does not sufficiently value either his own visual efficiency or the optometrist's reputation. For either reason, he should not be entrusted with the doctor's reputation, but should be advised to acquaint himself with it, and to return later.

If the patient is willing, but unable to pay the fee named, and is nevertheless permitted to obligate himself beyond his circumstances, the debt may, probably will, become an irritant and cause the patient to hold the doctor's reputation too lightly.

Obviously then, the professional investigation of a given case should be continued through a sufficient number of appointments to permit a thorough understanding by the doctor of his patient's circumstances, environment, condition and requirements; and on the other hand, by the patient of the doctor's methods and aims.

A proper fee is unquestionably a safeguard to professional reputation. Furthermore, inadequate fees will not permit the doctor to secure proper equipment, and will prevent investments both of time and money in the constant pursuit of knowledge demanded by the rapid advancement of the science of optometry. Finally, no man can give his undivided attention to patients' troubles when he has financial worries sapping a great deal of his energy.

Another safeguard is the avoidance of arousing the patient's expectations. It is much better for the patient to realize more han he anticipated instead of less. The professional optometrist will say something like this to the patient who demands assurance of satisfactory results:

"I am quite sure I know the right thing to do in your case, and how to do my part. However, I can do no more than my best. Much depends on you, and upon circumstances over which I have no control. If you have any serious doubt of my skill, ability and integrity, I would rather not risk my reputation on your case."

I wish to say that the professional practice of optometry has today within its grasp, an opportunity greater than that offered any other profession, to render a real and valuable service to humanity. And we hope these chapters encourage active minds to thoroughly investigate achievements of the science of optometry, now being further developed in the professional practice of optometry, which enable the alert and conscientious to promise posterity stronger eyes and greater comfort.

THE SUBJECTIVE DETERMINATION OF ASTIGMATISM

Dr. W. Clifford Furbush

The Optometry of today is demanding greater and greater effort and skill on the part of the Optometrist. The twenty-one point test, which is now being used so generally, demands accuracy in the determination of data, if the diagnosis of this data is to be correct. It is evident that, as our table of "expecteds" is to be built around our subjective test, that that test must not be in error, for such an error would be reflected throughout the entire examination.

One error that is often found in subjective findings is the astigmatic correction. We are apt to find these errors either in the amount of the cylinder or the position of the axis, or both. Most optometrists test for astigmatism in two ways, the keratometer and the subjective chart (clock dial). As the keratometer measures only the corneal astigmatism, our final analysis must depend to a large extent on the subjective examination for the cylindrical portion of our finding.

My method of making this test is similar

to most other methods. I use the Clason projector which has the clock dial and the revolving cross. In making the test I reduce visual acuity to 20/50, determine the axis of the error on the clock chart, correct the error found with the revolving cross, and recheck with the clock chart. These findings are then compared with my retinoscope and keratometer findings.

Some time ago I incorporated in my routine exam the use of the unfused cross-cyl. test. I discovered that the cross used in making that test afforded an excellent means of checking my cylindrical correction at the near point when its axis was horizontal or verticle. The checking of the astigmatism in this way showed a frequent necessity for modification of the distance finding.

In order to make this test in all cases I made a new chart. I cut out a disc of white cardboard about two inches in diameter on which I made a multiple cross. This I mounted on another piece of cardboard so that it would revolve. I then marked the periphery of the disc in degrees.

In making this test I combine it with my unfused cross-cyl. test. I first add enough plus to cause a slight blur, then dissociate the eyes with verticle prism. I then place the cross so that it corresponds with the axis of the cyl. found in the distance test for first the upper image, then the lower, equalizing the lines by making whatever changes necessary in the power or position of the cyl. I then continue with my cross-cyl. test.

The use of this test has been quite gratifying and has given me much added confidence in the accuracy of my subjective findings. No doubt many others use a similar test, but perhaps there are some who do not. I hope that some of those who have not used it will find the suggestion useful.

THE FUNCTIONAL IMPORTANCE OF THE OBLIQUE MUSCLES

Dr. Guy L. Du Plessis, Opt.

The importance of declinations or cyclophorias as a cause of complaint, both before and after the prescribing of lenses has been grossly neglected. Stevens and Savage gave us detailed information on this subject, and while we have made use of the rest of their myologic work, we have virtually ignored declinations and torsions.

The writer prefers the terminology of Stevens, because his terms have generally been adopted in the study of the ocular muscles and because Savage's term of cyclophoria and cyclotropia are somewhat confusing. When we speak of Esophoria, we infer a tendency of the visual axii to turn in as against Esotropia, an actual turning in. However, the oblique muscles do not function in exactly the same manner as the recti and they present problems which must be considered from a different angle.

This subject cannot be fully exposed in 1000 words. The writer can only point to the faulty logic underlying our present consideration of the peri-ocular muscles in relation to the ametropia. We have concentrated on the lateral recti muscles in relation to ametropia to the point where we expect a definite reaction of these muscles to the application of lenses. If the case is hyperopic, we expect any Esophoria present to decrease upon application of correcting lenses, and when the hyperopia is associated with Exophoria, though the etiology is not quite clear we generally expect an increase in the exophoria.

As a generality, this assumption is comforting and is born by the greater number of our cases. But it is merely an observation and one without definite conclusions when the other muscles involved are ignored. Occasionally we will encounter a case where the expected is not realized. Undismayed as when peering in entrails and finding the supposed diseased organ normal, the surgeon removes it anyway, we correct the error and let it go at that; or we enter

a sea of perplexities to justify the prescription. This maze, as may be called the relation of ductions to blur, break recovery points, with or without adjuncts such as prisms and cross-cylinders is of very, very doubtful significance.

If our office were a laboratory and each patient a guinea pig, we might, not would, but might arrive at some correct conclusion. Unfortunately neither the operator nor the patient can stand the expense of time and money involved in the guinea pig type of experimentation. The point of this diatribe is that we have theorized in great detail on the physiology of the lateral muscles, have neglected the vertical recti, and absolutely ignored the obliques. Not more than one in one hundred refractionists have a clear conception of the obliques, their function and its mechanism. Stevens devoted more pages to the obliques than to any other pair of muscles, partly because of their slightly more complicated physiology, partly because of their interesting peculiarity and mainly because of their hitherto unrevealed importance in vision. With the recent renewed interest in the size and shape of the ocular image and its observation in routine refraction, renewed interest in the oblique muscles is to be expected. We may here make the statement that: *The principal function of the obliques is to equalize the ocular images in their spatial projection, thus eliminating diplopia and distortion.*

The obliques are very adaptable and respond to stimulus rapidly. Their functioning is excited by the intense desire for binocular single vision not of point in space, but of line in space, and answer to the law of corresponding points. Any mild distortion resulting from their action is eventually ignored by the brain. However this distortion is sometimes very marked and objectionable. It can be remedied by alteration of the prescription. The obliques can suffer from temporary or permanent deviations from the normal. They may excite temporary or permanent deviations of the other peri-ocular muscles. They may provoke unnatural posture of the head such as cataphoria or anaphoria. They may cause abnormal facial expressions. They are assisted in the saggital rotation of the globes by the vertical recti. The latter being directed backward and inward from the centers of rotation, any traction of one of the verticals alone produces a turning up and in of the eye and a rotating of its vertical meridian about a fore and aft or saggital axis. We can easily imagine the involvement of various muscles with each other, as for instance the internal rectus with the superior oblique by studying the attachments and direction of traction of the periocular muscles.

Deviation of the vertical meridian of one eye is called declination by Stevens. Any compensatory movement to correct this deviation is called torsion and torting power is measurable as ductions are. An astigmatic error at oblique axis produces non-corresponding points. This in turn would cause diplopia were it not for the obliques torting the eyes about their saggital axis and juxtaposing the principle meridians. If the error remains uncorrected, this torting becomes permanent and the new position is a declination of each eye. This new position, while it produces distortion at first, is later misinterpreted by the brain so that the distortion disappears. The new position may be painful or a change from this position, may produce asthenopia. The action of the obliques as above considered is understood to be synergistic, i. e., O. D. clockwise, O. S. counterclockwise, thus producing a negative declination. But we also have that condition where the meridian of greatest error is at meridian 40 degrees in both eyes. To compensate, both eyes turn clockwise as we have a negative declination in the right eye and a positive in the left. These declinations are conjugate as in versions. We are thus forced to consider the obliques not only in their synergistic function, but also in their conjugate. There is a definite relation between the amount of astigmatism, the meridian of error and the compensating movement of the eye involved, and the

writer believes that the abnormal functioning of the obliques entails a commensurate malfunctioning of the lateral muscles, thus producing unexpected and unexplained phorias upon the application of lenses. It is reasonable to believe that the next important improvement in refractive techic lies in clinical findings on the obliques and their effect on other muscles and on the size and shape of the ocular image.

Our present instrumentation is inadequate for oblique muscle findings, just as we have no office means of ascertaining quickly the size and shape of the retinal image. Stevens' clinoscope is nowhere to be found and if it were some changes would be needed to ascertain declinations of the eyes in the depressed position such as reading.

If refraction is to boast of scientific accuracy, the function and anomalies of the obliques cannot be ignored. The Chimera of details involving the lateral muscles must be abandoned or the tests relegated to minor importance.

The reader is referred to the January, 1935 issue of the American Journal of Optometry for an elaboration of this paper and to Stevens, Savage and Helmholtz for as complete details as we possess today on this intriguing subject.

THE NEW SCIENCE OF SEEING

by R. B. Brown, Jr.

Illuminating Engineer

The Edison Electric Illuminating Company of Boston

The new science of seeing which involves partnership between vision and light is based upon twenty years of research by many persons, particularly by Dr. M. Luckiesh and associates of the Research Laboratory, General Electric Company, Cleveland, Ohio.

In the earliest stages of this research, threshold data was obtained. For example, visual acuity was extensively studied and found to vary directly in accordance with the illumination on test objects. Similar studies were made showing that speed of vision likewise varied directly in accordance with illumination, as measured in foot candles. Tests were carried into the field to show that these factors affected the efficiency of workers and that hence the data should be put into practical use.

In all of these investigations attention was focused upon minimum requirements. In the case of visual acuity, interest centered on the smallest objects that could be seen under certain intensities of illumination, and in the field production tests interest was centered on the point at which the workers' work was reached by maximum speed. No consideration at that time was given to the physiological aspects, that is to say, the ease with which these visual tasks were performed and the expenditure of human energy in the process. Because the levels of illumination dealt with in these investigations were so low, that is of the order of 1/1000 of natural daylight values, further studies were made into that great unknown region which lies between the low levels commonly found in artificial lighting systems, and the optimum or daylight levels.

While the research has hardly begun, many startling facts have been revealed so far, and sufficient information has been collected and correlated so that we now have the beginnings of an entirely new science, that of seeing. For the first time investigations are being made into the subject of

what it costs us in terms of human energy consumed in trying to perform abnormally severe visual tasks under the wholly inadequate illumination intensities prevalent today. For the first time we are considering the penalties which result from the creation of the artificial world in which we now live.

Man came indoors only yesterday. For hundreds of thousands of years man lived out-of-doors. His eyes were evolved for distant vision, his visual tasks were relatively simple and when daylight failed, he went to bed. Contrast these natural conditions with those prevalent in our artificial world, today. For example, since man came indoors he has had to adapt himself for close vision, that is to say, from 15 to 30 inches, to abnormally low illumination intensities, to night and day living, and to abnormally severe visual tasks, such as reading, sewing, etc. True, the eye is a wonderful organ, but it is wholly unreasonable to suppose that in the infinitesimal fraction of time of the so-called civilized era, eyes have been able to readjust themselves to the new conditions.

What has happened as the result of this tremendous difference between the natural conditions under which man evolved and those of the civilized era is now the subject of considerable investigation. We know, for example, that the percentage of persons having defective vision increases progressively from birth to old age. For example, 20 percent of children, having normal vision at birth, have defective vision upon entering school. Upon leaving college, the percentage having defective vision is 40 percent, and at the age of 60 years, 95 percent have defective vision. This can only be accounted for by the severity of the visual tasks, prolonged periods of study and reading, and wholly inadequate illumination. Other investigations furnish adequate data to the effect that the percentage of persons having defective vision is greatest for those groups of persons who use their eyes most for difficult seeing tasks, at relatively short distances. The lowest percentage of persons having defective vision applies to those groups of persons who work outdoors, such as hunters, sailors, soldiers, policemen, farmers, laborers, etc.

Space does not permit a full discussion of numerous other investigations that have been made, and are still being made along the lines of developing a new science of seeing. Suffice it to say, data is now available indicating that the process of seeing involves expenditure of nervous energy, and that therefore it is a mistake to regard the eye as a physiological entity by itself. It is obvious, also, that in correcting these conditions, we are restricted largely to those external physical factors such as corrective lenses and the lighting, natural or artificial.

There is need, today, for the training of men as "seeing specialists" who will make practical use of the data on vision and lighting, thus bringing to bear all of the external physical factors which are perfectly controllable. The process of seeing involves three factors: first, the eye; second, the visual task; and third, the light. The eye can be sharpened with the aid of corrective lenses. There is little that can be done with the visual task except over a long period of time. For example, we shall probably be forced to read newspapers having relatively fine print and representing a poor contrast, and we shall probably have to go on doing innumerable other tasks which are difficult on the eyes. The factor, however, which is perfectly controllable in quantity and quality is the factor of light. For this reason a study of lighting is most essential, and a knowledge of its application and usefulness is most essential to eye specialists. As a result of research referred to in this article, a whole new picture is opened up for the eye specialist and the lighting specialist, who by harmoniously working together will soon make real progress in the movement for better sight.

AS YOU LIKE IT!—HITHER AND THITHER

According to Dr. Brucker (Theoretic Optics) the laws of nature have yet to be repealed! (Volstead again???)

Dr. Klein seems to be "stepping on the necks" of all our perpetual smoke fiends—(Cigarette life if you don't weekend!)

Many of the students in the Freshman Anatomy class seem to have the powerful knack of throwing their voices or rather "doubling for Miss Amici". (Rakusin seems to stand at the head of this group!!)

Round bottom lenses seem to have a rather amusing effect upon some of the more intellectual members of the class. (Russell, Roy, Pierce, etc.)

Even with the moral?? support of a young lady's presence, the M. S. O. basketball team succumbed to the powerful onslaught of the Roxbury Boys' Club in a decidedly close game?? (Barney Levin had to use logarithms in order to keep *their* score on one page!!!)

Alas and Alack!! Dr. Bencker's dog finally died after living a life full of trials and tribulations (Doc is wearing a new fur coat!!)

"Baby-Face" Casson seems to be blamed for even the slightest disturbance in class. (Due to his innocent cherubic countenance —Dr. Svendson??)

After a recent difficult problem explanation by Dr. Paul Cline in Physiologic Optics, Al Roy's voice is heard meekly, "Doctor, what is your opinion of pharmacy as a profession?"

Just another one of times when putting your nose to the grindstone signifies a change in "faith". (With apologies to Berlowitz—just one of those *"lithps"*)

What is the reason for the sudden change of mind in deciding not to go home over the holiday—Pincky??? (Hughes the new flame now???)

Abyssinia,

POROUS OCTOPUS.

JOKES

Sonia (meeting at convention)—"I've heard a lot about you."

Gert.—"Possibly, but you can't prove it."

* * *

Aunt Dinah was having a tooth pulled by a "painless" dentist. The dentist had difficulty in making the extraction. Finally the tooth was out and Aunt Dinah straightened up with an evil glare in her eye and remarked: "Well, sah, Mr. Dentist, maybe you all is painless, but ah ain't."

* * *

"Willie," said his mother, "I wish you would run across the street and see how old Mrs. Brown is this morning."

A few minutes later Willie returned and reported: "Mrs. Brown says it's none of your business how old she is."

* * *

"To what do you attribute your longlivity?" inquired the long man.

"To the fact," replied the old man, conclusively, "that I never died."

Doc. Namias—"Your face is strangely familiar, I'm sure I have seen you somewhere."

She—"Yes, you have. You saw me standing in the street car yesterday, all the way from Masachusetts Avenue to Park Street, while you sat."

* * *

Student—"Here's a piece of rubber in my hash."

Wonder Bar—"No doubt. The motor is displacing the horse everywhere."

* * *

Circus Manager—"Well, what's wrong now?"

India Rubber Man—"Every time the strong man writes a letter he used me to rub out the mistakes."

* * *

"My wife always gets historical when I stay out late at night."

"Hysterical, you mean."

"No, historical. She digs up all my past."

INFLUENCE OF OCULAR DEFECTS UPON THE HUMAN SYSTEM

G. Frederic Beane, Opt. D.
Class of June, 1901—Klein School of Optics

Years of experience in the examining of eyes, and the adapting of lenses to them for the correction of various errors of refraction has taught us that any decided malformation of the eye or the improper balance of muscular arrangement, may under certain conditions affect the general system of the body to a more or less extent.

The reflex symptoms are shown in people, who use their eyes on particularly close work for hours at a time, and also affect many whose distant vision is below normal.

The effects are manifested by various organs of the body that are reached by the nerves of the central nervous system.

You are all aware that there are twelve pairs of cranial nerves and that six of them have some connection with the eye. Now of these six, several also have branches that are connected with other nerves that supply important organs of the body. You can readily see how, when there is a disturbance that affects the nerve that supplies the eye, if that has a branch going to some other part of the body, that also may be affected by reflex action.

The most common symptom of eyestrain is headache, but the pain is in so many different parts of the head it is difficult to be sure whether it is from eyestrain or some other cause.

If the pain is located around the eyes, and just above the bridge of the nose, it would indicate the trouble was from the stomach, or eyes and nose. If in the center of the forehead above the bridge of the nose on a level with the upper part of the orbit, it indicates constipation, decayed teeth or errors of refraction.

The time of the day the headache appears is also an important factor. If it appears in the morning after a night of several hours of close work, or in the late afternoon at the end of a day of hard use of the eyes it is a pretty good sign of eyestrain, especially if the headache disappears after a day or so of rest.

Headaches may be caused by muscular imbalance. The strain caused by watching fast moving objects, such as looking out of a car window or watching crowds cause this kind of eyestrain.

Red lids and styes are also symptoms of eyestrain as well as headaches, also indigestion, nausea and dizziness.

Often a person will suffer from indigestion and will try various remedies without relief. He notices that if he takes a vacation his indigestion disappears, but returns after he resumes his work again. Then, often by chance, someone suggests it may be his eyes that are at fault, and he has them examined and the glasses prescribed relieve the indigestion. This, however, does not mean that all cases of indigestion can be relieved by glasses.

Car sickness is another symptom that is often relieved by proper lenses.

We sometimes see people, who carry their head tipped to one side. This may be caused by a lack of balance of the vertical muscles, causing diplopia if the head is carried straight. Prisms base up or down often corrects the trouble.

Oftentimes a person, particularly a child, is irritable and cross for apparently no good reason. Many remedies are tried without avail until as a last resort they have their eyes examined, and find quite often high defects of vision, which when corrected, the child is quiet and peaceful again.

We find children in school, sometimes in advanced grades, who are highly myopic, without their suspecting it. This is because they think what they see is what everyone else sees. This is not apt to be so at present because of the eye examinations in

(*Continued on Page 15*)

A SIMPLIFIED PROCEDURE TO DETERMINE FATIGUE OR STRESS OF THE FUSION, ACCOMMODATION, AND PSYCHIC FACULTIES THROUGH ANALYSIS OF THE STIMULATIONS TO CONVERGENCE

W. S. Farmer, Opt. D.

The step we propose to discuss in this article is known as our No. 22 step in our regular routine examination. The finding is made as follows:

Working with fixation object at 13 inches, (for this purpose we use our "Utility Near Point Card" with the dot as the fixation object) we have before the patient's eyes his subjective distant correction as determine by the No. 7 step in the regular 21 point examination.

We believe it is agreed that the average patient with an average pupillary distance of 62 millimeters has in effect at 13 inches. roughly speaking, 20 prism diopters of convergence. Now, if we can analyze and measure the source of stimulation which produce this 20 prism diopters of convergence, we will have made an important step in locating the fatigued or stressed functions.

We know of at least three sources of stimulation that are used to maintain convergence at this point, 13 inches, namely: Fusion, accommodation, and physic. We are interested in knowing which of these functions produces the most stimulation for convergence.

After using this technique for some three years we have been able to set up standards, or expecteds, that serve our purpose very accurately. We have found that at 13 inches the stimulation should be about equal from all three sources.

Let us first consider the stimulation from the fusion faculty, its measurement and significance. We measure the effect produced by this faculty at 13 inches merely by disassociating the fusion faculty from the convergence act with prisms base-up or down. The amount of fusion stimulation to convergence is measured merely by measuring the phoria at this point, and the resultant, exophoria, in prism diopters indicates the part that fusion was playing in the convergence act. This should be somewhere between 5 and 10 prism diopters. If below 5, it would indicate that fusion was not carrying enough stimulation. If more than 10, it would indicate that the fusion faculty was being over stimulated.

Next, we disassociate or inhibit all possible accommodation at this point by placing plus 3.00 spheres before each eye. Again we measure the phoria, or exophoria, and we should note an increase of from 5 to 10 prism diopters over and above that revealed by the fusion disassociation in the first step. If the increased phoria is less than 5 prism diopters, it indicates that accommodation is not supplying enough energy to the convergence act. If the increased phoria is more than 10 prism diopters, it indicates that accommodation is supplying too much energy to the convergence act or is being burdened beyond the expected amount.

Let us say, for example, that the first step revealed 6 prism diopters of exophoria, and after we have inhibited the accommodation we find an additional exophoria of 12 prism diopters, making a total of 18 prism diopters. Thus we have accounted for 18 prism diopters of the known total 20 prism diopters that were in effect at the beginning of this procedure. This leaves a balance of 2 prism diopters, and experience has taught us that we can rightly attribute this to the psychic faculty.

In fact, the psychic faculty should produce almost as much stimulation for convergence at this point as each of the other two faculties, namely: Fusion and accommodation. So we set up an expected of between 5 and 10 prism diopters, or possibly a lit-

tle lower than that of the fusion and accommodation faculties. If the psychic faculty is below 5, it seems that this faculty should be developed to assist fusion and accommodation in the convergence and visual act; or the other faculties should be suppressed to where the stimulation is fairly well equalized. If the psychic is producing more than 10 prism diopters of convergence, then it should be suppressed.

Thus, with this procedure it is possible to find and analyze the functions of greatest and least stress, or the greatest and least fatigued functions as revealed by these functions when completely inhibited from the convergence act. Our purpose is to relax or inhibit these functions one by one and measure the amount of stimulation the function had been producing before it was disassociated from the convergence act. These steps will indicate to us what function should be stimulated and what function should be suppressed in order to equalize to the point of harmony these three great and important faculties of human vision.

In closing, may we say that we realize much of this article is not orthodox, but we plead with you not to criticize until you have first understood and used the technique on a sufficient number of cases to arrive at a sane and practical conclusion.

Conclusions: This test is to be made after the complete 21 point test, as recommended by the Graduate Clinic Foundation. This test, or one similar, was originated by Dr. Carl Shepherd and modified by us to meet our practical requirements. You will note that we do not use meter angles, nor do we split prism diopters into halves or quarters; for in routine practice we are interested only in finding indications that point to the stress or fatigue of the function, or functions, responsible for the trouble, that we may direct our efforts at once to the correction of these abnormalities.

We deem this one of the most simple, definite, and accurate steps in our regular routine examination.

FUN (?) AT M. S. O.

We are now in the third and most embarrassing quarter of the school year.... If you flunked or got a low mark in Midyears you have to work like H--- Well, like I have to. And if you did O. K. you have to work twice as hard to keep up the old average....What's the use....There is no rest for the student.

The Fraternity smoker was the usual success....I heard tell that the refreshments were swell....Don't be silly! I mean the food of course. Judging from the Thursday morning class...."Smoke gets in your Eyes".

Talking of Smokers and smokes.... Camels are the popular smoke for the Theoretic group....They give you the "Lift", Brainy....And is that handy at times.

No wonder our class has that sleepy look all the time....the various Profs take turns "rocking" the class. This popular indoor sport has a sandman effect on one and all.

Well, Kiddies, the Bridge Party went off with the proverbial bang....Mrs. Swenson is to be congratulated on her grand work of organizing this affair....And of course both classes for their cooperation....The freshmen helped too.

The student lectures conducted by Dr. Green are sure going over big....Some of the boys are actually doing some outside reading. And the novel presentations are all to the good. The boys really out-do themselves....There are some embryonic teachers in our modest class.

The Optometry Club has chosen their Freshman members....This honor is bestowed according to marks and general knowledge of optometry....These boys are to carry on the "Old Optometry Club" honor for the next few years....or maybe longer.

Who knows?

No Junior, there is no connection between deaf mute patients and Dumb students.... this is mere coincidence.

The Funeral Parlor down stairs is thinkvery seriously of putting in a clinic of its own....This may turn out to be very handy ....The white "butcher" coats will probably come into use after all.

Boy, have we got experiments....You hold a pin head (not your own stupid) before your eye and looking at it through an aperture the pin shows up upside down (or maybe I'm wrong)....This is good stuff... especially if you try looking at your marks.

Tin Types—

T. Burke....Politics takes a Holiday.

S. Alperen....Big Business wasting time.

G. LeMay....Country boy makes good—girls.

J. Lane....Intelligence resting.

Glixman....Radical Rube.

M. Sperber....The Court Jester.

D. Berlowitz....Why can't I keep my mouth shut.

D. Kern....The fall of the House of Romonoff.

G. Weinberg....Collegiate secret passion.

S. Karvelas....Bananas, Apples and Oranges.

Emmes...."Don't you think that might be possible".

Singer....Why didn't I stick to the Hotel game.

Fox...."My Landlady Says....."

INFLUENCE OF OCULAR DEFECTS

(*Continued from Page 12*)

the schools, which detect these cases quite early.

One of the greatest thrills I remember from fitting glasses to a child was several years ago when I was examining a boy of 13 or 14 years of age, whose visual acuity was less than 20/200 without glasses, and with a —1.50 sphere it was 20/20. I asked the boy to look outdoors. He glanced up at the sky and exclaimed, "Gee, the sky is blue ain't it?" That boy had lived his life up to then without ever seeing the sky. It certainly made me feel that I really had been able to accomplish something.

Glare is also an important factor, and the position of lights, and the location of desks in schools and benches in factories have much to do with the securing of good results in both places.

I could continue for hours with examples and illustrations of cases showing the influence of ocular defects upon the human system, but I guess I will stop now and give someone else a chance.

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